Remarks

Restriction

The Examiner restricted claims 24-25 (and claim 23 to the extent it claims detection of mucin transcription), placing them in new Group X. Applicants respectfully traverse, on the grounds that a search of the art calculated to retrieve art relating to the expression of mucin will naturally also retrieve art relating to mucin transcription. Thus, no additional burden is imposed upon the Examiner by including Group X with the current elected Group.

Rejection Under §102(b)

Claims 12-15 were rejected as anticipated under §102(b) over A.D. Gruber et al., Genomics (1998) 54:200-14, reference AH, ("Gruber"). Applicants respectfully traverse.

Applicants have canceled claims 12-15, but without abandoning the invention claimed therein. Applicants reserve the right to pursue this subject matter in a copending continuation application.

Rejection Under §103(a)

Claims 12-15 and 23 were rejected as obvious under §103(a) over Gruber in view of Yerxa et al., US 6,624,150 ("Yerxa"). Applicants respectfully traverse.

Gruber disclosed the identification and sequencing of hCLCA1, its normal distribution in the intestine, transient expression in HEK cells, and its Ca^{++}-modulated Cl^- channel activity. Gruber also disclosed that in cystic fibrosis (CF) "several disturbed electrolyte trafficking pathways including Na+ and Cl- channels other than CFTR contribute to a variety of complex pathological changes in epithelial tissues, mainly in the lung, intestine, and pancreas [cite omitted]. Although serious airway pathology is usually the primary cause of mortality in young adults with CF, intestinal alterations are found as meconium ileus in afflicted newborns and overproduction of a stringy mucus and hyperplasia of goblet cells that lead to distal intestinal obstruction in adults [cite omitted]." (Gruber at p. 200, 2nd column). However, Gruber failed to disclose that hCLCA1 directly regulates hMUC2.

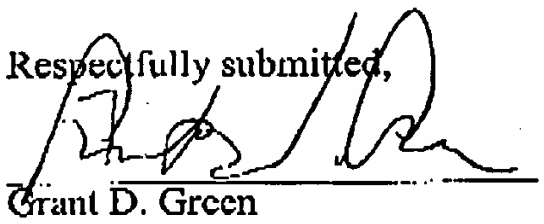
Yerxa disclosed methods for regulating fluid transport and mucin secretions in the gut using compounds that modulate P2Y (purinergic) receptors. As far as the undersigned can determine, the only mention of calcium-activated channels occurs at column 10, lines 31-34

("The fluid absorption properties of this epithelium can be modulated electrogenically by calcium-activated potassium channels at the basolateral membrane."), and the channels mentioned are not the hCLCA1 proteins of the invention. The only apparent mention of chloride channels occurs at column 9, line 66 to column 10, line 2 ("Chloride efflux across apical membrane chloride channels at the apical membrane of epithelial cells along these crypts provide the driving force for osmotically obliged fluid secretion in the small intestine."), and again, Yerxa fails to identify the particular channels involved. In neither case did Yerxa mention that hCLCA1 modulates mucin expression.

Given Yerxa's teachings that mucus production can be regulated by P2Y antagonists, Yerxa cannot be said to teach one of ordinary skill in the art to examine calcium-activated chloride channels for mucus regulation. Since Gruber is silent on the issue of mucin regulation, and Yerxa teaches that mucin expression is regulated by P2Y receptors, one of ordinary skill in the art would be **taught away** from the present invention. These references, either singly or in combination, fail to support a prima facie case of obviousness for the claimed invention.

Applicants respectfully submit that the application is now in condition for allowance, and solicit such action at an early date. If there are any remaining questions, the Examiner is invited to telephone the undersigned at the numbers provided below.

Respectfully submitted,



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